

ABSTRACT FORM FOR ALL GSA MEETINGS IN 1995

Complete all sections ① through ⑨ below.

① TYPE ABSTRACT COMPLETELY WITHIN THE BLUE LINES BELOW. (10 point type minimum)

No 36739

CHICXULUB IMPACT CRATER GRAVITY ANOMALIES DERIVED FROM TOPEX/ POSEIDON PRECISION ALTIMETRY.

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Offshore gravity anomalies associated with the Chicxulub impact crater, which has been linked to mass extinctions connected with the Cretaceous-Tertiary (K-T) transition, have been derived from TOPEX/Poseidon (T/P) precision altimetry. The gravity anomalies off the north-west corner of the Yucatan Peninsula are consistent with a multiring structure buried in the ocean floor.

The T/P altimetric system measures sea level relative to the geocenter along its ground-track with unprecedented accuracy (< 5 cm) and precision (- 2 cm). The along-track resolution is approximately 600 m and the cross-track spacing is approximately 300 km. Since the altimeter revisits the same ground-track every 10 days, signals due to seasonal and annual variations, as well as system noise, can be reduced significantly by averaging the sea level data for one or more years. It is tacitly assumed that the resulting mean sea surface represents undulations in the geoid, which can then be transformed into gravity anomalies using potential theory. This is the fundamental approach used to obtain the results presented here.

This methodology is being extended to ERS- 1 and Geosat altimeter data so that a high resolution, two dimensional gravity anomaly map for the region can be developed.

Altimeter derived ocean currents, winds, and waves off the coast of Yucatan and extending into the Gulf of Mexico will also be presented.

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— INVITED FOR SYMPOSIUM NUMBER: _____

(first five words of Symposium title)

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☒ VOLUNTEERED FOR THEME SESSION NUMBER: T36
Impact in the Gulf: Chicxulub

(first five words of Theme Session title)

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